11. STUDIES OF CONFORMATIONAL PROPERTIES OF ESCHERICHIA COLI RIBOSOMES WITH THE USE OF ACRIDINE ORANGE AS A PROBE

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11. STUDIES OF CONFORMATIONAL PROPERTIES OF *ESCHERICHIA COLI* RIBOSOMES WITH THE USE OF ACRIDINE ORANGE AS A PROBE

Kazuo HORIE

The interaction of *E. Coli* vacant ribosomes with acridine orange was studied to obtain informations about conformational states of rRNA in ribosomes. Acridine orange (AO) binds to an RNA in two different modes; the cooperative outside binding with stacking of bound AO's and the intercalation between nucleotide bases. The number of the nucleotides in rRNA accessible to the outside binding of AO was found to reduce to about 1/4 in ribosomes compared with free rRNA. The 16-S rRNA in 30-S subunits was found about 1.4 times more exposed than the 23-S rRNA in 50-S subunits. The formation of the tight 70-S particle reduced the affinity of ribosomes to the outside binding of AO, suggesting that a change in the overall states of the rRNA in ribosomes occurs by the association of ribosomal subunits. The Mg^{2+} dependence of the amount of AO's outside bound to ribosomes inactive in 70-S formation was quite different from that of active ribosomes but similar to that of free rRNA.

12. 核断熱消磁による ^{3}He の冷却

政 春 尋 志

1 mK 付近及びそれ以下の温度域での物性を研究するために超低温生成技術の開発が行われている。我々のグループは固体 ^{3}He の核磁性，特に核整列の状態を NMR で調べることを目的に銅の核断熱消磁冷凍機を製作した。これは 0.5 φ の銅線約 3000 本を束ねたものと ^{3}He試料の熱交換容器とからなる核断熱消磁段を，8 T の磁場をかけて ^{3}He－^{4}He希釈冷凍機で約 20 mK 近くまで予冷し，超伝導状態になると金属の熱伝導率がが小さくなることを利用した熱スイッチを OFF 状態にしたのち，6時間あるいは 9 時